1- Reservoirs
2. Well File

BELCO PETROLEUM
CORPORATION OF PERU
(SUCURSAL DEL PERU)

WELL FILE

TELEF. — NEGRITOS
868 - 864 - 865

APARTADO Nº 1
TALARA - PERU

PE-239-85

May 21, 1985

Why is this well to poor? We estimated BPR?

TO : Drilling & Production Superintendents
FROM : Petroleum Engineering
SUBJECT : COMPLETION PROGRAM / WELL Z2A-21-626-D-L06 (L06-2)

Attached you will find the Completion Program for well L06-2, which will be completed in the Rio-Bravo formation.

Completion program for this well can be summarized as follows :

- Run and cement 5 1/2" csg. at 5200'.
- Run GR-CCL correlation log.
- Shoot-frac the Rio Bravo (5180'-3960') in two stages. Frac fluid to be used is gelled water with 30 lb/1000 gls. WG-12.
- Once the gel is broken open the well for clean out then place well on production test.
- In the event that the well is unable to flow by itself or when production performance indicate so, clean out frac sand and run artificial lift. Program will be submitted accordingly.

Based upon log evaluation Reservoir Dept. has estimated an IPR of 300 BOPD. However we do not agree with this figure and our estimate is 200 BOPD.

The well does not have any potential sand for future recompletion.

Ivan Rodriguez
Petroleum Engineer

VoBo : C.A. Valdizán
Senior Pet. Engineer

Approved : C.R. Schmalhausen
Engineering Supt.

IR:yt
cc: O.M.
Lima (Tech.)
Workover
Prod. Lobitos
Geology/ Well File

BELCO PETROLEUM CORP. OF PERU
DPTO. TECNICO
4 JUN 1985
RECIBIDO

BELCO ENGINEERING

COMPLETION PROCEDURE

WELL	Z2A-21-626-D-L06 OFFICIAL NUMBER	L06-2 BELCO NUMBER	Lobitos Offshore AREA	02485 AFE No.

1. Run and cement 5 1/2" csg. as per program in attachment 1.
2. Install a 10" x 3000# WP x 6" x 5000# WP tbg. head spool with 2" x 5000#WP seal wing valves and 6" x 5000# WP ball valve on top as shooting valve.
3. Run a temperature surveys 6 to 12 hours after plug down to locate the top of the cement .
4. Run GR-CCL in the interval (5250' - 3500') and check the top cement with GR,since iodine 131 will be used to tag cement.
5. Test the shooting valve, well head and casing with pressure up to 5000# 24 hours after plug down.
6. Perforate the Rio Bravo formation in the 1st. stage according to the program.
7. Take SI BHP to record the original pressure of the reservoir, only if well head pressure is recorded after perforating.
8. Frac the first stage according to the program.
9. Shoot-frac the rest of the stages according to the program.
10. Leave the well shut-in for about 4 1/2 hours after displacement.
11. Open the well and put it on Production for cleaning (wide open).
12. Hook-up the well into the production facilities.

I. RODRIGUEZ ENGINEER	C.A. VALDIZAN Vº Bº	DATE: MAY 21, 1985 HOUR:	DISTRIBUTION

BELCO ENGINEERING

CASING AND CEMENT PROGRAM

WELL	Z2A-21-626-D-L06 (OFFICIAL NUMBER)	L06-2 (BELCO NUMBER)	Lobitos Offshore (AREA)	02485 (AFE No.)

5353 ft. (TOTAL DEPTH)	5200 ft. (TOTAL VERT. DEPTH)	18 1/2 (MAX ANGLE)	14 (AVERAGE ANGLE)	9 5/8 in at 1497 ft. (LAST CASING)

CASING PROGRAM

CASING DESIGN — SIZE : in	SECTION 1	5250 Surf. (INTERVAL)	5250 ft. (LENGTH)	J-55 (GRADE)	17 lb/ft (WEIGHT)	LT & C (THREADS)
	SECTION 2	(INTERVAL)	ft. (LENGTH)	(GRADE)	lb/ft (WEIGHT)	(THREADS)
	SECTION 3	(INTERVAL)	ft. (LENGTH)	(GRADE)	lb/ft (WEIGHT)	(THREADS)
	SECTION 4	(INTERVAL)	ft. (LENGTH)	(GRADE)	lb/ft (WEIGHT)	(THREADS)

FLOAT EQUIPMENT	SHOE	Guide Shoe (TYPE)	5250 ft. (DEPTH)
	COLLAR	Diff. fill float collar (TYPE)	5210 ft. (DEPTH)
	OTHER	(TYPE)	ft. (DEPTH)

CENTRALIZERS	5210'-3800' (INTERVAL)	EVERY Two Joints	17 (TOTAL)	(INTERVAL)	EVERY	(TOTAL)
	(INTERVAL)	EVERY	(TOTAL)	(INTERVAL)	EVERY	(TOTAL)
	(INTERVAL)	EVERY	(TOTAL)	(INTERVAL)	EVERY	(TOTAL)

CEMENTING PROGRAM

WASHER	Mud Flush (TYPE)	20 bbl (VOLUME)	(COMPOSITION)		
SLURRY 1	400 sxs (CEMENT)	4 o/o (GEL)	1.2% CFR-2 (ADDITIVE)	- 0.5 gl/1000 (ADDITIVE)	NF-1 (ADDITIVE)
	14.1 lb/gl (DENSITY)	1.55 ft³/sx (YIELD)	7.8 gl/sx (WATER REQ)	2.30 Hr. Min (T.T.)	2800 ft (EST. TOP)
SLURRY 2	300 sxs (CEMENT)	Neat o/o (GEL)	(ADDITIVE)	- 0.5 gl/1000 (ADDITIVE)	NF-1 - 0.5%Halad (ADDITIVE 9)
	15.6 lb/gl (DENSITY)	1.18 ft³/sx (YIELD)	5.2 gl/sx (WATER REQ.)	Hr. Min (T.T)	3500 ft (EST. TOP)
SLURRY 3	sxs (CEMENT)	o/o (GEL)	(ADDITIVE)	(ADDITIVE)	(ADDITIVE)
	lb/gl (DENSITY)	ft³/sx (YIELD)	gl/sx (WATER REQ.)	Hr. Min (T.T)	ft (EST. TOP)

DISPLACEMENT	122 (VOLUME)	Sea Water (FLUID)	6-8 BPM (RATE)	1200 - 1600 psi (PRESS AT PLUG BUMPING)
WELLHEAD	SIZE: 13 3/8"x 9 5/8" x 5 1/2" x 2 7/8"	WORKING PRESSURE : 2000 - 3000 - 5000 psi		

REMARKS

- Circulate the well prior cementing
- Use iodine 131 after pumping the first 10 bbls. cement slurry.
- Estimated hole diameter 9 1/2".

ENGINEER	V° B°	DATE: HOUR:	DISTRIBUTION

BELCO ENGINEERING

PERFORATING AND FRACCING PROGRAM

WELL	Z2A-21-626-D-L06 (OFFICIAL NUMBER)	L06-2 (BELCO NUMBER)	Lobitos Offshore (AREA)	1 of 2 (STAGE)
Rio - Bravo (FORMATION)	5180' - 4373' (INTERVAL)	116' MD (106' VNF) (NET SAND)	21 (SHOTS)	

PERFORATING PROGRAM

PERFORATIONS						CORRECTED COLLARS
5180'	4536	4410				CORRECTED COLLARS WILL
5016	4530	4401				BE PROVIDED AT WELL
5012	4526					SIDE.
4849	4445	4395				
4845	4440	4389				
4836	4430	4373				
4830	4424					
4810	4416					

PERFORATING GUN	3 3/8" Selective Fire Gun w/0° phasing between shots and mechanically excentralized.	JETS	TYPE : Jet XVI 0.49 ENTRY HOLE : IN

escopeta fusil canon pistola revolver

FRACCING PROGRAM

FRACCING FLUID			
	WG - 11, 30 lbs. ADDITE	GBW - 3 0.75lbs. ADDITIVE	Frac -Flo, 1 gal. ADDITIVE
	CLA-STA, 1 gal. ADDITIVE	Surflo B-17 , 200 ppm. ADDITIVE	Kcl 1% by weight ADDITIVE
	ADDITIVE REQUIRE PER 1000 GLS OF BASE FLUID, UNLESS OTHERWISE IS INDICATED.		

BASIC FRAC STEP	FRACCING FLUID		PROPPANT		
	Treated Sea Water PRE - PAD	0-8000 GLS	MESH	LB / GL	LBS
	Treated Sea Water PAD	8000-13000 GLS	20/40 MESH	1 LB / GL	5000 LBS
	Treated Sea Water CARRY	13000-17000 GLS	20/40 MESH	2 LB/GL	8000 LBS
	Treated Sea Water CARRY	17000-21000 GLS	10/20 MESH	2 LB/GL	8000 LBS
	Treated Sea Water CARRY	21000-23000 GLS	10/20 MESH	3 LB / GL	6000 LBS
	Treated Sea Water CARRY	23000-24000 GLS	10/20 MESH	4 LB / GL	4000 LBS
	Treated Sea Water BLENDER - FLUSH	0-300 GLS	MESH	LB / GL	LBS
	Treated Sea Water DISPLACEMENT	4200 GLS	MESH	LB / GL	LBS

OPERATING CONDITIONS	1 TOTAL STEPS	25 - 30 BPM RATE	3500 PRESSURE	5000 MAXIMUM PRESSURE

REMARKS

BELCO ENGINEERING

PERFORATING AND FRACCING PROGRAM

WELL	Z2A-21-626-D-L06 (OFFICIAL NUMBER)	L06-2 (BELCO NUMBER)	Lobitos - Offshore (AREA)	2 of 2 (STAGE)
Rio - Bravo (FORMATION)	4292' -3959' (INTERVAL)	73' MD (68' VNF) (NET SAND)	14 (SHOTS)	

PERFORATING PROGRAM

PERFORATIONS							CORRECTED COLLARS
	4292	4081					CORRECTED COLLARS WILL
	4286	4078					BE PROVIDED AT WELL
	4176	4039					SIDE.
	4170	3973					
	4164	3965					
	4158	3959					
	4152						
	4146						

PERFORATING GUN	3 3/8" selective fire gun w/0° phasing between shots and mechanically excentralized.	JETS	TYPE : ENTRY HOLE : IN

FRACCING PROGRAM

FRACCING FLUID			
	WG -11, 30 lbs. (ADDITE)	GBW - 3, 0.75 lbs. (ADDITIVE)	Frac-Flo, 1 gal. (ADDITIVE)
	Clasta, 1 gal. (ADDITIVE)	Surflo B-17, 200ppm (ADDITIVE)	Kcl 1% by weight (ADDITIVE)

ADDITIVE REQUIRE PER 1000 GLS OF BASE FLUID, UNLESS OTHERWISE IS INDICATED.

BASIC FRAC STEP	FRACCING FLUID		PROPPANT		
	Treated Sea Water (PRE -- PAD)	0-5000 GLS	MESH	LB / GL	LBS
	Treated Sea Water (PAD)	5000-8500 GLS	20/40 MESH	1 LB / GL	3500 LBS
	Treated Sea Water (CARRY)	8500-11000 GLS	20/40 MFSH	2 LB/GL	5000 LBS
	Treated Sea Water (CARRY)	11000-13500 GLS	10/20 MESH	2 LB/GL	5000 LBS
	Treated Sea Water (CARRY)	13500-15000 GLS	10/20 MESH	3 LB / GL	4500 LBS
	Treated Sea Water (CARRY)	15000-15500 GLS	10/20 MESH	4 LB / GL	2000 LBS
	Treated Sea Water (BLENDER — FLUSH)	0-300 GLS	MESH	LB / GL	LBS
	Treated Sea Water (DISPLACEMENT)	3800 GLS	MESH	LB / GL	LBS

OPERATING CONDITIONS	1 (TOTAL STEPS)	25- 30 BPM (RATE)	3500 psi (PRESSURE)	5000 psi (MAXIMUM PRESSURE)

REMARKS

WELL : Z2A-21-626-D-L06 (L06-2)

FRACCING MATERIALS

	1st.	2nd.	Total
Water (gls)	31000	21000	52000
WG-11 (lbs)	930	630	1560
CLA-STA (gls)	31	21	52
FRAC-FLO (gls)	31	21	52
GBW-3 (lbs)	23	16	39
KCL (lbs)	2600	1750	4350
Surflo B-17 (gls)	6.5	4.5	11
Sand 20/40 (lbs)	13000	8500	21500
Sand 10/20 (lbs)	18000	11500	29500

L-0[illegible]-2

WELL COMPLETION REPORT

Well E.2.A-21.626.D.LOC (LOC.2) Completion Date MAY. 21. H. 1985

Concession LOC. plat. Lobitos offshore Supervisor Miguel Vargas ROJAS

County Talara. Piura. Peru Signed

Zero Point (RKB to CHF) 33

Wellhead (Sizes & Series) 13 3/8" x 9 7/8" x 5 1/2" x 2 7/8" 2000 3000 5000

Surface Casing (Size, Grade, Weigth & C) 17. JTS 13 3/8" J-55. 8rd 54.5# STC 693'
Cement. w/ 600 SX

Cement Top a 650

Shoe a 692

Interm. Csg. (Size, Grade, Weigth & Coupling) 37. JTS. 9 5/8" N-80 - 47# LTC 1423
2. JTS. 9 5/8" J-55. 40# LTC 74.

Cement Top a 1461

Shoe a 1497

Tubing (Ft. Size, Grade, Weigth & C)

Seating Nipple (Type & Depth)

Sliding Sleeve (Type & Depth)

Packer (Type & Depth)

Tail or Bell

Perforations (Type of Gun) GO. well service 3 3/8" selective fire Gun

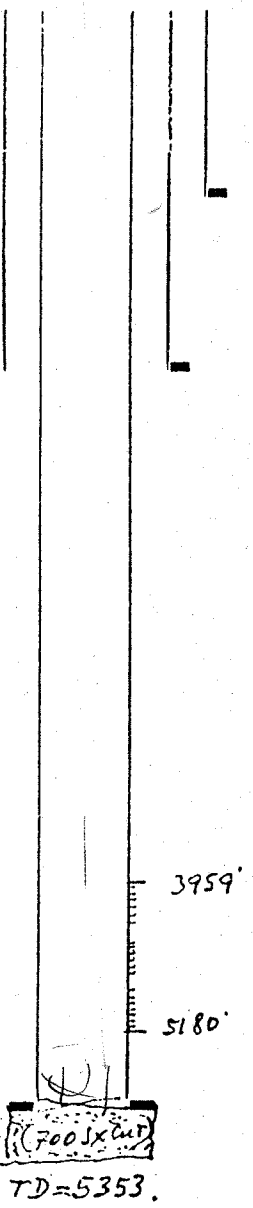
(Net Feet & Shots) 189 135

From — To 5180' 3959'
Sand Rio Bravo

Prod. Csg. (Ft, Size, Grade, Weigth & Coupling) 135 JTS 5 1/2" J-55. 8rd 17# LTC 5267
Cement. w/ 700 SX

Cement Top a 1250

F. C., F. S. 5227' 5265'



PRODUCTION DATA:

	Pt	Pc	Pf	Hrs	Oil	Wat	GOR	CH	API	BSW
Initial MAY-23-85.				2		only		2"		
After ..... Days :										

I. P. R. Assigned Date

Remarks: GO. well Rueda Log. CBL/VDL. 5250'-3300' Shooting formation Rio Bravo pressure N/R. ESTEPA carried out. water-free. Shut in well open up well flow. only water

J Gonzales

Imp. Enrique — 35988